Headquarters U.S. Air Force

Integrity - Service - Excellence

Transformation of The AF Programs to Performance Based Management

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Why Performance Based Management?

- **Then**
  - **DoD remediation liability estimate (1987)**
    - **$14B and 13 years**
  - **Limited technical & programmatic experience**
    - **Led to great uncertainties**
  - **Development of process-intensive regulatory models**
    - **Ensure adequate site characterization and risk assessment**
- **Now**
  - **DoD remediation liability estimates (2004)**
    - **$50B and beyond 2014**
  - **20 years of experience, knowledge & innovation**
    - **Led to methodology to address uncertainties**
  - **Performance-based management (PBM) principles**
    - **Focus on results not simply the process**

- **Transformation of the AF Environmental Restoration Program is Key for Current and Future Project Success**

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Discussion Points

- **Present How Performance-Based Management and RPO, Triad, and PBC are Related**
- **Discuss Available Technology Performance Information**
- **Present Outline for How Baseline/Benchmark Documents can be Updated and Used**

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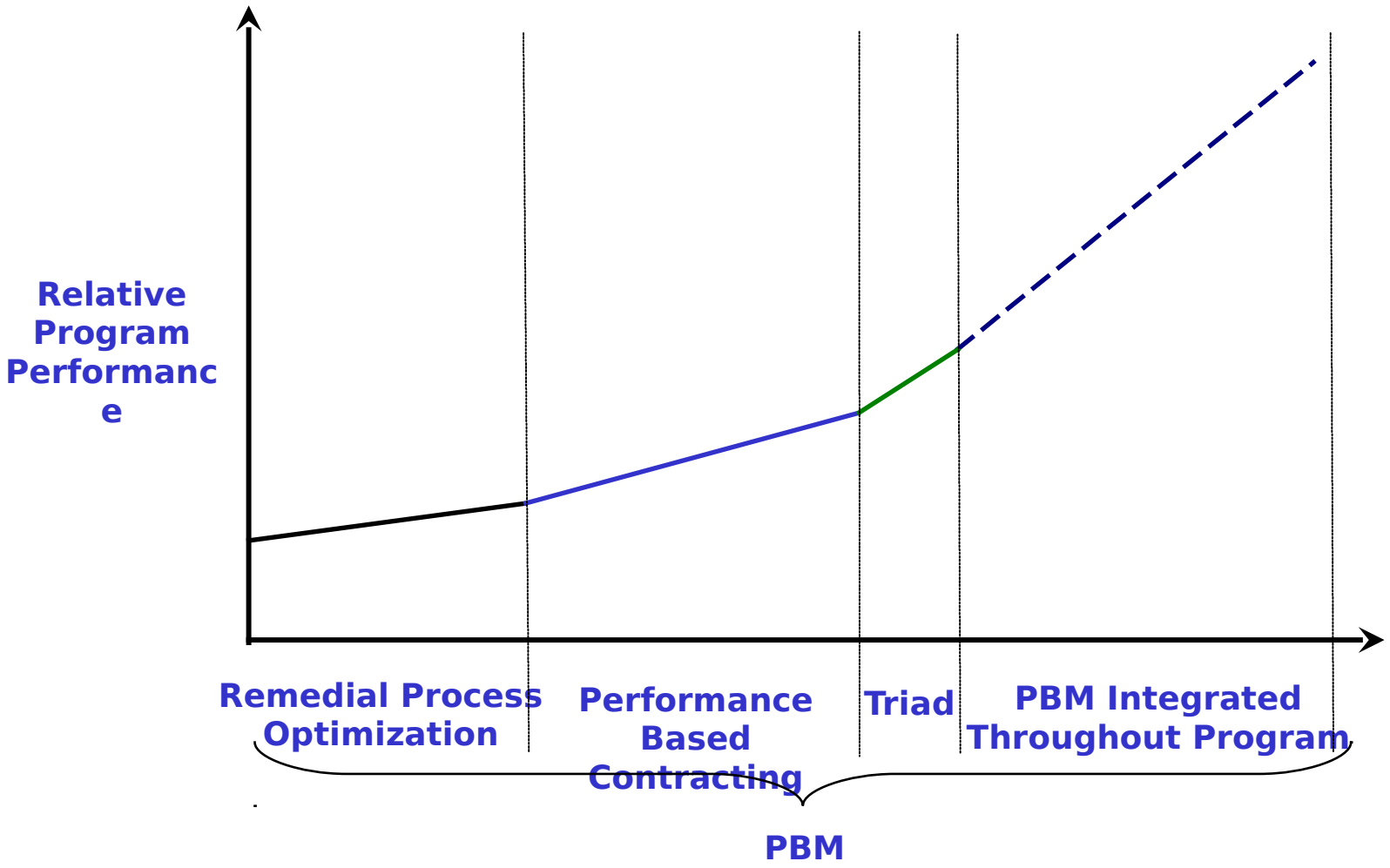
Progress in Performance Based Concepts



riad, PBM all are based on Systematic Planning, Dynamic Workplans, and Dynamic Data Col

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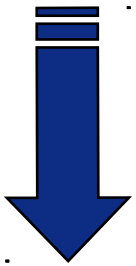
Current Performance Oriented Concepts

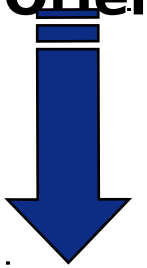
RPO

- Applied to Continuing Projects
- Technology & Process Optimization

PBC

- Transfer Performance Risk to Contractor
- Provides Cost Management
- Goals Oriented





- **Instill discipline in the AF Restoration Program by using classic business model objectives across MAJCOMs**

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How is PBM Different?

- PBM is a continuous process where project status is updated and evaluated throughout the program life-cycle
- Shifts the focus onto results attained rather than steps completed
- Promotes establishing a realistic exit strategy
- Promotes implementation of innovative contracting
- Implements RPO to optimize the Installation's Restoration Program
- Emphasis on smarter, faster ways to achieve site characterization and Response Complete
- Faster site characterization by using IPO/Triad approach
- Remedial actions may have negative impacts on human health and the environment

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PBM Leads to Project Savings

- **Arctic Surplus Salvage Yard**
  - Schedule to complete reduced from 4 years to 1 year
  - Land Use Controls

→ **Savings of $30.5M on Restoration**

- **Galena**
  - Future Land Use Risk Assessment **Student exposure**

→ **Prevented**

- **King Salmon**
  - Optimized SVE systems through RPO

→ **Saved $1.3M**

- **Eielson**
  - Closed 3 sites with Triad type approach **$1.8M**
- **Altus / AETC**
  - Changes to ARARs
  - Land Risk Analysis
  - Alternative Technology

→ **Savings of $130M on CTC over 40 years**

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Challenges for PBM Implementation

- **PBM Implementation Represents a Change in the way Business is Done**
  - **HQ/MAJCOM support**
  - **Installation support**
  - **Coordination with Regulators**
    - **Strong base level relationships critical**
    - **Could require up-front time commitment**
  - **Service Center/Contracting Support**

- **Perception that 'New' Funding is Required**
  - **Site PBM Assessment & Planning**

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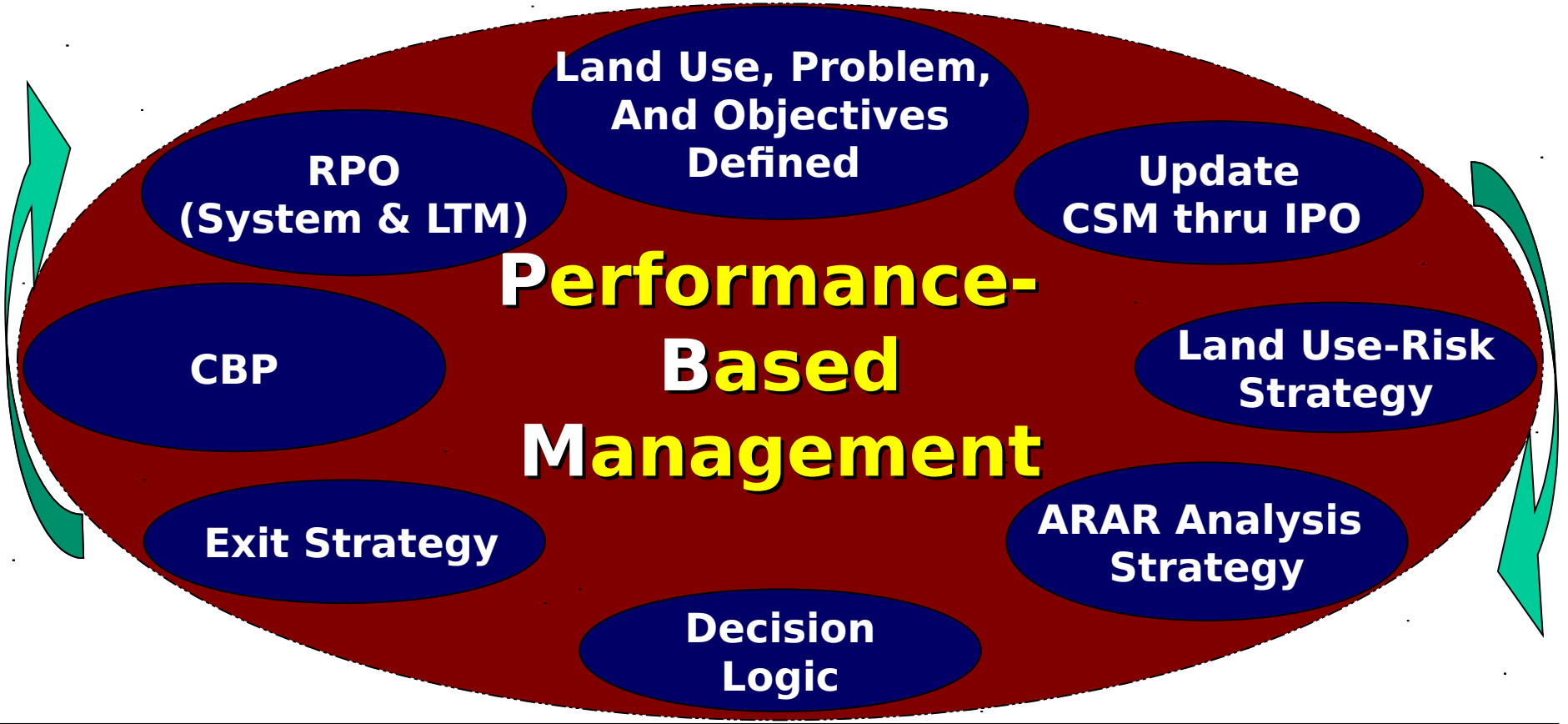
The PBM Strategies for Program Improvement

- **Performance-Based Management (PBM) Tools**
  - **Streamlined Investigation (Triad/IPO)**
  - **Innovative Technologies**
  - **Remedial Process Optimization (RPO)**
  - **Performance-Based Decision Documents**
  - **Private Sector Benchmarks**
  - **Performance-Based Contracts (PBC)**
  - **Exit Strategy**

Uncertainties Can Be Managed by PBM



Long-Term Monitoring (LTM) - **Conceptual Site Model (CSM)**
Contracts based on Performance (CBP) - **Restoration Program Optimization (RPO)**
Investigation Process Optimization (IPO) [Triad equivalent]
Applicable or relevant and appropriate requirements (ARAR)

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PBM Facilitates the Cleanup Process

- **Obtain Performance Based Agreements**
- **Make Land-use Determinations – *current and future***
  - **Reconcile with Base Development Plans (active)**
  - **Sensible Zoning**
- **Develop Systematic Plans**
- **Establish Dynamic Data Collection**
- **Develop Performance Based Decision Document**
- **Defines Clear Exit Strategy**

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PBM Refines Strategy for Selection of ARARs

- **ARAR Sufficiency: "Necessary, Feasible, Practicable"**
  - **CERCLA 120(d)(4) - ARAR Can Be Waived If:**
    - **Will Result in Greater Risk**
    - **Technical Impracticability or Equivalent Performance**
    - **Inconsistent Application of State Requirements**
  - **AF Policy: If ARAR Not Promulgated ("Unregulated / Emerging" Contaminants Issues) Then:**
    - **Cost / Benefit Analysis**
    - **Uncertainty Analysis**
    - **SAF/IEE Approval**

PBM Relies on Project Data to Evaluate Performance

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- **Information Tracking from an RPO Perspective**

Basic | **Cost**

Rec Num	RPO Report & Section ID; Recommendation	Status of Recommendation	Action Item (OPR/POC) Action Item RPO Team	FY Program	Projected Outyears	RPO Estimated Cost Avoidance Annual/Life Cycle	RPO Cost	Cost to Implement Recommendation	Documented Cost Avoidance Annual/ Life Cycle

Tracking

Risk Assessment Issues	Impact on Time to Cleanup	Results Presented and Approved by Stakeholders Y/N	Implementation Contract Awarded Y/N	Implementation Work Plan Approved Y/N	LTM / RA-O Optimized Y/N	OPS NFA Y/N	Ratio RPO Metric Points/	Completed or Linked

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RPO Inventory & Prioritization Software (RIPS)

- RPO Inventory & Prioritization Software (RIPS)
  - Goal: Systematic Approach to Identifying Remediation Systems and LTM Programs
  - Better allocation of restoration funds
  - Track performance over time
- Benefits of RIPS
  - Overall inventory of remediation systems and LTM programs
  - A tool to prioritize systems in terms of optimization potential
  - Annual update capability to monitor system performance
    - i.e., Command & Control tool
- Future of RIPS
  - Web-based
  - Tied to AF database system

PBM Information Applies to Current and Future Programs

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- **Information and project performance against metrics are key in tracking program progress**
- **Notional RPO Inventory Prioritization Software (RIPS)**

System Type	Number of Systems	Average Annual O&M Cost	Last 12 Months O&M Cost	Cost Savings	Percent Savings	Average Annual Monitoring
Pump & Treat	260	$60,580,000	$55,733,600	$4,846,400	8%	$9,481,333
Soil-Vapor Extraction	64	$10,424,000	$10,384,000	$40,000	0%	$1,880,000
Dual-Phase Extraction	144	$30,440,000	$28,160,000	$2,280,000	7%	$2,776,000
Air Sparging/SVE	128	$12,912,392	$12,656,000	$256,392	2%	$6,480,000
Bioventing	96	$7,120,000	$6,960,000	$160,000	2%	$1,832,000
Nutrient Enh. - Multiple	16	$800,000	$800,000	$0	0%	$720,000
Nutrient Enh. - Continous	8	$112,000	$112,000	$0	0%	$112,000
Wall/Barrier	1	$50,000	$50,000	$0	0%	$50,000
LNAPL Recovery	8	$80,000	$80,000	$0	0%	$0
Thermal Technology	5	$10,000,000	$10,000,000	$0	0%	$800,000
Monitored Natural Attenuation	24	$608,000	$608,000	$0	0%	$504,000
Other	72	$2,560,000	$2,960,000	-$400,000	-16%	$1,120,000
Totals	**826**	**$135,686,392**	**$128,503,600**	**$7,182,792**	**5%**	**$25,755,333**

LTM Programs

Totals	**80**	**$80,906,000**	**$70,231,000**	**$10,675,000**	**13%**

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Why Maintain Inventory and Performance Data?

- Gain understanding of remedial system alternatives
- Gain understanding of remediation system inventory and remediation system effectiveness
- Provide a tool for project managers to use in selecting technologies for future application
  - Baseline/Benchmark

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Uncertainties in Performance Data Complicates PBM Planning

- **Wide array of both long-term and short-term information**
  - **Duration**
  - **Cost**
  - **Effectiveness**
- **Not updated in a format that allows significant comparison**
  - **Project size and contaminant level affect cost**
  - **Site conditions affect effectiveness**

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Better Accounting of Performance Data Will Aid in Future PBM Planning

- **Notional PBM Performance Tracking Matrix**

MEDIUM	TECHNOLOGY		EFFECTIVENESS		COST			COST IMPACTS
			Short Term	Life Cycle	Start-Up	O&M	Life Cycle*	
Ground-water	Pump & Treat		◑	◔	Moderate	High	Installa-tion + $100K/ to >$2M/YR	• Treatment Method • Size of Plume • Well Depth • No. of Wells
	Permeable Reactive Barrier	Shallow (0-40 FT)	◕	●	High	Low	$2500/FT	• Wall Length • Wall Thickness • Wall Depth • Barrier Material
		Deep (40-120 FT)	◑	◕	Very High	Low	$3000/FT	
Soil	Landfill Cap		◕	◑	High	Low	$55K to $301K/ ACRE	• Area to be Capped • Type/Material Used
	Soil Vapor Extraction		◑	◕	Moderate	Moderate	$10 to $50/ Cubic Meter	• Off-Gas Treatment • No. of Wells • Soil Characteristics • Contaminant

* excluding monitoring costs

● High probability of cost-effective solution with desired results

◕ Moderately high probability of cost-effective solution with desired results

◑ Medium probability of cost-effective solution with desired results

◔ Moderate probability of cost effective solution with desired results

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Project Benchmark is 1st Step in Establishing PBM Matrix

- Define data requirements
- Define concept of operations
  - How will the data be stored and retrieved
  - What will the data be used for
  - Who will access the data
- Conduct targeted interviews
  - Data collection
- Either build new tool or add data to an existing tool

Current Benchmark Data Resources

- Many organizations have developed benchmarks to meet their needs

- Other potential resources include:
  - DOE Environmental Technology Office
  - USACE
  - NAVFAC

- Leverage the information already developed

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Other Benchmark Resources

- **Private Industry**
  - **Has same performance needs**
  - **Works with wide variety of remediation systems**

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Next Steps

- **Develop Updated Resource of Performance Information**
- **Expand Performance Based Guidance and Understanding**
  - **AFCEE PBM web site:**
    http://www.afcee.brooks.af.mil/products/techtrans/pbm/default.asp
- **Develop Performance Based Programs and Workshops**

2004 AFCEE Technology Transfer Workshop

San Antonio, Texas

Henry B. Gonzalez Convention Center

August 16-19, 2004

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QUESTIONS?

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